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PATENT

Atty Docket No.: 70006393-1
App. Ser. No.: 09/943,027

IN THE CLAIMS:

Please find a listing of the claims below, with the statuses of the claims shown in parentheses. This listing will replace all prior versions, and listings, of claims in the present application.

1. (Currently amended) A method for executing a work flow in a workflow management system (WFMS) having at least one process instance executing an original process definition, and migrating the said process instance to a changed process definition, said method comprising the following steps:

- a) checking each process instance during the execution of the original process definition whether the process instance meets a migration condition; and
- b) migrating each process instance during the execution of the original process definition to a modified process definition if the migration condition is met such that said process instance executes said changed process definition.

2. (Original) A method according to claim 1, wherein checking each process instance further comprises the following steps:

- defining a set of worst case migration points (WMP), and
- migrating the process instance to the modified process definition, if its execution has not gone beyond anyone of said worst case migration points (WMP).

3. (Original) A method according to claim 2, said step of defining a set of worst case migration points (WMP) comprises one of the following actions:

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- reading a set of worst case migration points (WMP) from an user input, or
 - computing a set of worst case migration points (WMP) based upon the original process definition and the modified process definition.
4. (Original) A method according to claim 3, said step of computing a set of worst case migration points (WMP) comprises the following steps:
- defining a set D including all nodes that are changed in the modified process definition with respect to the original process definition;
 - determining a set P including all predecessor nodes for all nodes belonging to set D;
 - determining a reachability matrix $R=(r_{ij})$ for all nodes belonging to set P, each row and column in the reachability matrix R representing a node in the order listed in P, wherein a node X representing a column is regarded as reachable from a another node Y representing a row, if there exists a path of arcs forward from X to Y; and
 - determining the set of worst case migration points from the reachability matrix R.
5. (Original) A method according to claim 4, wherein the step of determining the reachability matrix $R=(r_{ij})$ further comprises the following actions:
- attributing a valued of x to each reachability matrix element r_{ij} if the predecessor node corresponding to said column j is reachable from the node corresponding to said row i;
 - attributing a value of x to each reachability matrix element r_{xx} and

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- attributing a value of y to each reachability matrix element r_{ij} if the predecessor node corresponding to said column j is not reachable from the node corresponding to said row i .

6. (Original) A method according to claim 5, wherein the worst case migration points are determined by selecting those predecessor nodes for which the elements r_{ij} from the corresponding column add to a value of x .

7. (Original) A method according to claim 6, wherein a value of 1 is chosen for x and a value of 0 is chosen for y .

8. (Original) A method according to claim 1, wherein said step of checking each process instance during the execution of the original process definition whether it meets a migration condition further comprises of steps for checking whether the node(s) in the original process definition being currently executed is/are also present in the modified process definition.

9. (Original) A method according to claim 8, wherein the step of checking whether a node in the original process definition being currently executed is also present in the modified process definition is repeated upon executing of each node(s) of the original process definition until the migration of said process instance is completed.

10. (Currently amended) A method for creating a process definition to be executed by a workflow management system (WFMS) comprising the following steps:

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- a) defining an original process definition to be executed in a work flow system;
- b) starting execution of the process instance as per the original process definition;
- c) defining a modified process definition;
- d) checking for each process instance whether a migration condition is met;
- e) replacing the nodes of the original process definition in a running process instance satisfying the migration condition by the corresponding nodes of the modified process definition such that said running process instance executes said modified process definition.

11. (New) A method for executing a work flow in a workflow management system (WFMS) having at least one process instance executing an original process definition, and migrating the said process instance to a changed process definition, said method comprising the following steps:

- a) computing a set of worst case migration points (WMP) based upon the original process definition and the modified process definition, wherein computing the set of WMP comprises,
 - i) defining a set D including all nodes that are changed in the modified process definition with respect to the original process definition;
 - ii) determining a set P including all predecessor nodes for all nodes belonging to set D;
 - iii) determining a reachability matrix $R=(r_{ij})$ for all nodes belonging to set P, each row and column in the reachability matrix R representing a node in the order

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listed in P , wherein a node X representing a column is regarded as reachable from a another node Y representing a row, if there exists a path of arcs forward from X to Y ; and

iv) determining the set of worst case migration points from the reachability matrix R ; and

b) migrating the at least one process instance during the execution of the original process definition to a modified process definition if the at least one process instance has not gone beyond anyone of the computed worst case migration points.

12. (New) A method according to claim 11, wherein the step of determining the reachability matrix $R=(r_{ij})$ further comprises the following actions:

- attributing a value of x to each reachability matrix element r_{ij} if the predecessor node corresponding to said column j is reachable from the node corresponding to said row i ;
- attributing a value of x to each reachability matrix element r_{ij} and
- attributing a value of y to each reachability matrix element r_{ij} if the predecessor node corresponding to said column j is not reachable from the node corresponding to said row i .

13. (New) A method according to claim 12, wherein the worst case migration points are determined by selecting those predecessor nodes for which the elements r_{ij} from the corresponding column add to a value of x .

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14. (New) A method according to claim 13, wherein a value of 1 is chosen for x and a value of 0 is chosen for y.

15. (New) A method according to claim 11, further comprising:

checking whether the node(s) in the original process definition being currently executed is/are also present in the modified process definition.

16. (New) A method according to claim 15, wherein the step of checking whether a node in the original process definition being currently executed is also present in the modified process definition is repeated upon executing of each node(s) of the original process definition until the migration of said process instance is completed.